This listing of claims will replace all prior version, and listings, of claims in the application:

Listing of Claims:

1. (original) A system for optical heterodyne detection comprising:

a first optical path for carrying an input signal;

a second optical path for carrying a swept local oscillator signal;

optical combining means for combining said input signal and said swept local oscillator signal into a combined optical signal;

a third optical path for carrying said combined optical signal;

a photodetector optically arranged to receive said combined optical signal from said third optical path, said photodetector generating an electrical signal in response to said combined optical signal;

an optical pre-selector optically arranged to filter an optical signal within one of said first, second, and third optical paths, said optical pre-selector having a passband that tracks the frequency of said swept local oscillator signal, said optical pre-selector outputting a filtered portion of said optical signal; and

means for adjusting said optical pre-selector passband in response to a measure of the frequency of said swept local oscillator signal and in response to a measure of a portion of said swept local oscillator signal after said portion of said swept local oscillator signal has optically interacted with said optical pre-selector, said optical pre-selector passband being adjusted to track the frequency of said swept local oscillator signal.

2. (original) The system of claim 1 further including a phase modulator for modulating at least some portion of said swept local oscillator signal, said phase modulator being responsive to said means for adjusting and being located along an optical path that is before said optical pre-selector.

3. (original) The system of claim 2 further including means for measuring the frequency of said swept local oscillator signal in real-time, said means for measuring having an output for outputting said measure of said swept local oscillator signal to said adjusting means.

4. (original) The system of claim 2 further including a clock source for controlling the timing of signal modulation caused by said phase modulator.

5. (original) The system of claim 2 wherein said optical pre-selector is optically arranged to filter said combined optical signal within said third optical path.

6. (original) The system of claim 5 further including means, located optically between said optical combining means and said photodetector, for tapping a portion of said combined optical signal and for forwarding said tapped portion of said combined optical signal to said adjusting means, said tapped portion of said combined optical signal including said portion of said swept local oscillator signal.

7. (original) The system of claim 2 wherein said optical pre-selector is optically arranged to filter said input signal within said first optical path.

8. (original) The system of claim 7 further including means for tapping said portion of said swept local oscillator signal from said second optical path, passing said portion of said swept local oscillator signal through said phase modulator, delaying said portion of said swept local oscillator signal, and interacting said portion of said swept local oscillator signal with said optical pre-selector.

9. (original) The system of claim 1 wherein said means for adjusting includes means for dithering said optical pre-selector passband.

10. (original) The system of claim 9 further including means for measuring the frequency of said swept local oscillator signal in real-time, said means for measuring having an output for outputting said measure of said swept local oscillator to said adjusting means.

11. (original) The system of claim 9 further including a clock source for controlling the timing of said dithering of said optical pre-selector passband.

12. (original) The system of claim 9 wherein said optical pre-selector is optically arranged to filter said combined optical signal within said third optical path.

13. (original) The system of claim 12 further including means, located optically between said optical combining means and said photodetector, for tapping a portion of said combined optical signal and forwarding said tapped portion of said combined optical signal to said adjusting means, said tapped portion of said combined optical signal including said portion of said swept local oscillator signal.

14. (original) The system of claim 9 wherein said optical pre-selector is optically arranged to filter said input signal within said first optical path.

15. (original) The system of claim 14 further including means for tapping said portion of said swept local oscillator signal from said second optical path, delaying said portion of said swept local oscillator signal, and interacting said portion of said swept local oscillator signal with said optical pre-selector.

16. (original) A method for monitoring an optical signal utilizing optical heterodyne detection, the method comprising:

combining an input signal with a swept local oscillator signal to generate a combined optical signal;

outputting said combined optical signal;

generating an electrical signal in response to said combined optical signal;

processing said electrical signal to determine an optical characteristic represented by said input signal;

filtering one of said combined optical signal, said input signal, and said swept local oscillator signal to pass a frequency band that tracks the frequency of said swept local oscillator signal; and

adjusting said filtering in response to a measure of the frequency of said swept local oscillator signal and in response to a measure of a portion of said swept local oscillator signal after said portion of said swept local oscillator signal has been filtered, said filtering being adjusted to track the frequency of said swept local oscillator signal.

17. (original) The method of claim 16 further including a step of modulating at least some portion of said swept local oscillator signal.

18. (original) The method of claim 17 further including a step of synchronizing said step of modulating to coincide with a step of measuring said portion of said swept local oscillator signal after said portion of said swept local oscillator signal has been filtered.

19. (original) The method of claim 17 wherein said step of filtering is a step of filtering said combined optical signal to generate a filtered combined optical signal and wherein said step of generating is a step of generating an electrical signal in response to said filtered combined optical signal.

20. (original) The method of claim 19 further including steps of tapping a portion of said combined optical signal and forwarding said tapped portion of said combined optical signal for use in said step of adjusting, said tapped portion of said combined optical signal including said portion of said swept local oscillator signal.

21. (original) The method of claim 17 wherein said step of filtering is a step of filtering said input signal to generate a filtered input signal and wherein said step of combining is a step of combining said filtered input signal with said swept local oscillator signal to generate said combined optical signal.

22. (currently amended) The method of claim 210 further including steps of tapping said portion of said swept local oscillator signal from said swept local oscillator signal, modulating said portion of said swept local oscillator signal, delaying said portion of said swept local oscillator signal, and filtering said portion of said swept local oscillator signal.

23. (original) The method of claim 16 wherein said step of filtering includes a step of dithering a filter passband for one of said combined optical signal, said input signal, and said swept local oscillator signal.

24. (original) The method of claim 23 wherein said step of filtering is a step of filtering said combined optical signal to generate a filtered combined optical signal and wherein said step of generating is a step of generating an electrical signal in response to said filtered combined optical signal.

25. (original) The method of claim 24 further including steps of tapping a portion of said combined optical signal and forwarding said tapped portion of said combined optical signal for use in said step of adjusting, said tapped portion of said combined optical signal including said portion of said swept local oscillator signal.

26. (original) The method of claim 23 wherein said step of filtering is a step of filtering said input signal to generate a filtered input signal and wherein said step of combining is a step of combining said filtered input signal with said swept local oscillator signal to generate said combined optical signal.

27. (original) The method of claim 26 further including steps of tapping said portion of said swept local oscillator signal from said swept local oscillator signal, delaying said portion of said swept local oscillator signal, and filtering said portion of said swept local oscillator signal.